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Finding Similar Drug Classes using RxClass

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Motivation

Drug classes constitute important information about the drugs and are critical to important use cases, such as clinical decision support (e.g., for allergy checking). Finding similar drug classes helps to identify important characteristics of drugs in different classification systems. *RxClass*, a web-based browser for drug classes, supports navigation between RxNorm drugs and drug classes from several sources (ATC, MeSH, DailyMed and NDF-RT), and allows users to explore similar classes.

Finding Similar Classes by Drug Membership

The *RxClass* application and its companion *RxClass API* offer functionality which allows users to retrieve similar classes relative to the selected class. Similar classes are defined here as classes which share a large proportion of drug members. The simple procedure for comparing two classes includes the following steps.

- Select a drug class (e.g., CALCIUM CHANNEL BLOCKERS (C08) in ATC) and display its members.
- Select the "similar classes" link above the list of drug members. A popup menu is displayed with the most similar classes (e.g., Calcium Channel Interactions in DailyMed). The class information along with the equivalence score is displayed for each similar class (here: 0.74).
- Select the "Venn" link to visualize shared vs. specific clinically significant drugs (ignoring base/salt distinctions) for the two classes as a Venn diagram, as well as a table. See figure 1.

In addition to retrieving similar classes for a given class, the RxClass API also supports the identification of classes from an arbitrary list of drug members (e.g., a drug value set).

Similarity Scoring

RxClass and the RxClass API similarity functions use equivalence and inclusion scores defined in prior work to find and rank similar classes. The equivalence score is based on the Jaccard coefficient , which we evaluated in previous work. The inclusion score identifies situations where a high similarity value is indicative of one class being included in the other.

Conclusions

Providing similar drug classes has been a missing piece of information in *RxNav*. With *RxClass*, we now provide a link between similar drug classes from various sources using its RxNorm drug membership.

RxClass is available from the main *RxNav* website (http://rxnav.nlm.nih.gov), along with additional information about *RxNav* and our APIs to various drug information sources.

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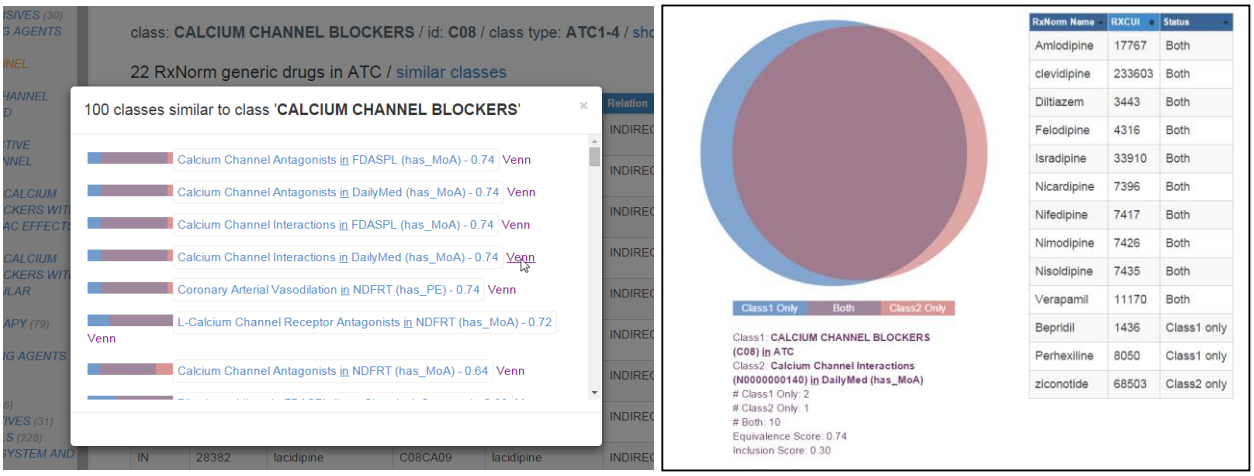

Figure 1. Sample screenshot of RxClass Similar Class Information